SEQ ID NO:	Sequence				
1	Rana pipiens liver ribonuclease cDNA (RaPLR1)				
2	Rana pipiens liver ribonuclease amino acid (RaPLR1)				
2	Rana pipiens ribonuclease cDNA with Met23Leu				
_	(recombinant RaPLR1 Met 23Leu)				
4	Rana pipiens ribonuclease amino acid with Met23Leu				
•	(recombinant RaPLR1 Met 23Leu)				
. 5	Rana pipiens ribonuclease cDNA with Met at position 1				
, ,	(recombinant Met(-1) RaPLR1)				
6	Rana pipiens ribonuclease amino acid with Met at position 1				
•	(recombinant Met(-1) RaPLR1)				
7	Rana pipiens ribonuclease cDNA with Met at position 1 and Met24Leu				
,	(recombinant Met(-1) RaPLR1 Met23Leu)				
8	Rana pipiens ribonuclease amino acid with Met at position 1 and Met24Leu				
8	(recombinant Met(-1) RaPLR1 Met23Leu)				
9	Rana pipiens ribonuclease amino acid with (His) ₆ , Met at position 7 and				
9	Met30Leu (recombinant Met(-1) RaPLR1 Met23Leu-(His) ₆)				
10	1 / 1				
10	Rana pipiens ribonuclease cDNA with Gln1Ser (recombinant RaPLR1 Q1S)				
11	Rana pipiens ribonuclease amino acid with Gln1Ser (recombinant RaPLR1 Q1S)				
12	Rana pipiens ribonuclease cDNA with Met at position 1 and Gln2Ser (recombinant Met(-1) RaPLR1 Q1S)				
12					
13	Rana pipiens ribonuclease amino acid with Met at position 1 and Gln2Ser				
1.4	(recombinant Met(-1) RaPLR1 Q1S)				
14	Rana catesbeiana oocyte ribonuclease synthetic gene cDNA (RaCOR1)				
15	Rana catesbeiana oocyte ribonuclease synthetic gene amino acid (RaCOR1)				
16	Rana catesbeiana ribonuclease cDNA with Met at position 1				
1.7	(recombinant Met(-1) RaCOR1)				
17	Rana catesbeiana ribonuclease amino acid with Met at position 1				
10	(recombinant Met(-1) RaCOR1)				
18	Rana catesbeiana ribonuclease cDNA with Met22Leu and Met57Leu				
10	(recombinant RaCOR1 Met22Leu Met57Leu)				
19	Rana catesbeiana ribonuclease amino acid with Met22Leu and Met57Leu				
20	(recombinant RaCOR1 Met22Leu Met57Leu)				
20	Rana catesbeiana ribonuclease cDNA with Met at position 1, Met23Leu and				
	Met58Leu (recombinant Met(-1) RaCOR1 Met22Leu Met57Leu)				
21	Rana catesbeiana ribonuclease amino acid with Met at position 1, Met23Leu and				
	Met58Leu (recombinant Met(-1) RaCOR1 Met22Leu Met57Leu)				
22	Rana catesbeiana ribonuclease amino acid with (His) ₆ , Met at position 7,				
	Met23Leu and Met58Leu				
	(recombinant Met(-1) RaCOR1 Met22Leu Met57Leu-(His) ₆)				
23	Rana catesbeiana ribonuclease cDNA with Gln1Ser (recombinant RaCOR1 Q1S)				
24	Rana catesbeiana ribonuclease amino acid with Gln1Ser				
	(recombinant RaCOR1 Q1S)				
25	Rana catesbeiana ribonuclease cDNA with Met at position 1 and Gln2Ser				
	(recombinant Met(-1) RaCOR1 Q1S)				

26	Rana catesbeiana ribonuclease amino acid with Met at position 1 and Gln2Se					
	(recombinant Met(-1) RaCOR1 Q1S)					
27	Rana pipiens ribonuclease Clone 5a1b cDNA insert					
28	Rana pipiens ribonuclease Clone 5alb amino acid with signal peptide					
29	CAAX motif to target heterologous proteins to the plasma membrane					
30	Rana pipiens forward degenerate primer					
31	Rana pipiens reverse degenerate primer					
32	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
33	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
34	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
35	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
36	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
37	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
38	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
39	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
40	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
41	Rana catesbeiana ribonuclease synthetic gene (RaCOR1) oligonucleotide					
42	Rana catesbeiana insertion primer for NdeI restriction site					
43	six histidine residue tag at amino terminus					

DNA sequence 312 b.p.

linear

RaPLRi

SEQ ID NO:3/4

315 b.p. DNA sequence

linear

caa gac tgg ctc acg ttt cag aag aag cac ctg aca aac acc cgg gat gtt gac tgt gin asp crp leu chr phe gin-lys lys his leu chr asn chr arg asp val asp cys aat aat act ong toa aca aac ong one cac ogo aag gan aag aac act oon acc tac ca asn asn ile leu ser thr asn leu phe his cys lys asp lys asn thr phe ile cyr ser cgt cct gag cca gtg aag gcc atc tgt aaa gga att ata gcc tcc aaa aat gtg tta act arg pro glu pro val lys ala ile cys lys gly ile ile ala ser lys asn val leu chr acc tot gag tot cat one tot gat tgc aac gta aca age agg one tgc aag tat aaa cta thr ser glu phe tyr leu ser asp cys asn val thr ser arg pro cys lys tyr lys leu aag aaa tea act aat aca ttt tgt gta act tgt gag aat caa get eea gta cat tte gtg lys lys ser chr asn chr phe cys val chr cys glu asn gln ala pro val his phe val ggt gtc gga cat tgc gly val gly his cys

recombinant RaPLR1 Met23Leu

SEQ ID NO:5/6

DNA sequence 315 b.p.

linear

recombinant Met(-1) RaPLR1

SEQ ID NO:7/8

DNA sequence 315 b.p.

linear

atg caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg gat gtt gac tgt met gln asp trp leu thr phe gln lys lys his leu thr asn thr arg asp val asp cys asn asn ile leu ser thr asn leu phe his cys lys asp lys asn thr phe ile tyr ser cgt cct gag cca gtg aag gcc atc tgt aaa gga att ata gcc tcc aaa aat gtg tta act arg pro glu pro val lys ala ile cys lys gly lle ile ala ser lys asn val leu thr acc ttt gag ttt tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tat as val leu thr ser glu phe tyr leu ser asp cys asn val thr ser arg pro cys lys tyr lys leu aag aaa tea act aat aca ttt tgt gta act tgt gag at caa gcc cca gta cat ttc gtg lys lys ser thr asn thr phe cys val thr cys glu asn gln ala pro val his phe val ggt gtc gga cat tgc gly val gly his cys

recombinant Met(-1) RaPLR1 Met23Leu

COUNTROD LOGINOR

SEQ ID NO:7/9

DNA sequence 315 b.p.

linear

acg cas gac tgg ctt acg tct cag aag aag cac ctg aca aac acc cgg gat gtt gac tgt $(His)_6$ - met gln asp trp leu thr phe gln lys lys his leu thr asn thr arg asp val asp cys

aac aat acc ecg cea aca aac teg tee eac ege aag gac aag aac acc eet acc eac eca asn asn ile leu ser thr asn leu phe his eys lys asn thr phe ile tyr ser

cgt cct gag cca gtg aag gcc atc tgt aaa gga att ata gcc tcc aaa aat gtg tta act arg pro glu pro val lys ala ile cys lys gly ile ile ala ser lys asn val leu thr

acc for gag too tax one tot gat type aan gra and age agg eet type aag tax aaa tha this ser glu phe tyr leu ser asp cys ash val this ser arg pro cys lys tyr lys leu

and and ten act and aca too too too go act too gag and can get con go cat too go lys lys ser this asn this phe cys val this cys glu asn gln all pro val his phe val

ggc gcc gga cac cgc gly val gly his cys

recombinant Met(-1) RaPLR1 Met23Leu-(His)6

DNA sequence 315 p.p.

linear

tea gae teg cet asp trp leu thr phe gln lys lys his leu thr asn thr arg asp val asp cys

aat aat atc atg tea aca aca ttg ttc cac tgc aag gac aag aac act ttt atc tat tea

cgt cet gag cea gtg aag gec atc tgt aaa gga att ata ata gec tec aaa aat gtg tta

arg pro glu pro val lys ala ile cys lys gly ile ile ala ser lys asn val leu thr

acc tet gag ttt tat etc tet gat tgc aat gga at aca acg agg et tgc aaa gta act

thr ser glu phe tyr leu ser asp cys asn val thr ser arg pro cys lys tyr lys leu

aag aaa tea act aat aca ttt tgt gea act tgt gag aat caa gec tee aag tat aaa tea

thr ser arg pro cys lys tyr lys leu

agg gec gec gga cat tgc

gly val gly his cys

recombinant RaPLR1 Q1S

SEQ ID NO:12/13

DNA sequence 315 b.p.

linear

acq tca gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg gat gtt gac tgt met ser asp trp leu thr phe gln lys lys his leu thr asn thr arg asp val asp cys

aat aat atc atg tca aca aac ttg ttc cac tgc aag gac aag aac act ttt atc tat tca
asn asn ile met ser thr asn leu phe his cys lys asp lys asn thr phe ile tyr ser

cgt cct gag cca gtg aag gcc atc tgt aaa gga att ata gcc tcc aaa aat gtg tta act
arg pro glu pro val lys ala ile cys lys gly ile ile ala ser lys asn val leu thr

acc tct gag ttt tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tta
thr ser glu phe tyr leu ser asp cys asn val thr ser arg pro cys lys tyr lys leu

aag aaa tca act aat aca ttt tgc gta acc tgt gag aat caa gct cca gta cat ttc gtg
lys ser thr asn thr phe cys val thr cys glu asn gln ala pro val his phe val

ggt gtc gga cat tgc
gly val gly his cys

recombinant Met(-1) RaPLR1 Q1S

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SEQ ID NO:14/15

DNA sequence 330 b.p.

linear

CAG AAC TOG GCT ACT TTC CAG CAG AAA CAT ATC ATC AAC ACT COG ATC ATC TGC AAC ACT gin asn trp ala thr pile gin gin lys his ile ile asn thr pro ile ile cys asn thr

ATC ATG GAC AAC AAC ATC TAC ATC GTT CGT CGT CAG TCC AAA CGT GTT AAC ACT TTC ATC ile mec asp asn asn ile cyr ile val gly gly gln cys lys arg val asn thr phe ile

ATC TCT TCT GCT ACT ACT GTT AAA GCT ATC TGC ACT GGT GTT ATC AAC ATG AAC GTT CTG ile ser ser ala thr thr val lys ala lle cys thr gly val ile asn met asn val leu

TCT ACT ACT CGT TTC CAG CTG AAC ACT TGC ACT CGT ACT TCT ATC ACT CGG CGT CGG TCC ser thr thr arg phe gin leu asn thr cys thr arg thr ser lie thr pro arg pro cys

CCG TAG TCT TCT CCT ACT GAA ACT AAC TAC ATC TCC GTT AAA TCC GAA AAC CAG TAC CCC pro Cyr ser ser arg thr glu thr asn tyr ile cys val lys cys glu asn gln tyr pro

CTT CAT TTC GCT GGT ATC GGT CGT TGC CCG val his phe ala gly ile gly arg cys pro

Rana catesbeiana synthetic gene & translated amino acid sequence

SEQ ID NO:16/17

333 b.p. DNA sequence

pro val his phe ala gly ile gly arg cys pro

linear

ATG CAG AAC TGG GCT ACT TTC CAG CAG AAA CAT ATC ATC AAC ACT CCG ATC ATC TGC AAC met gln asn trp ala thr phe gln gln lys his ile ile asn thr pro ile ile cys asn ACT ATC ATG GAC AAC AAC ATC TAC ATC GIT GGT GGT CAG TGC AAA CGT GIT AAC ACT TIC thr ile met asp asn asn ile tyr ile val gly gln cys lys arg val asn thr phe ATC ATC TCT TCT GCT ACT ACT GTT AAA GCT ATC TGC ACT GGT GTT ATC AAC ATG AAC GTT ile ile ser ser ala thr thr val lys ala ile cys thr gly val ile asn met asn val CTG TOT ACT ACT CGT TTC CAG CTG AAC ACT TGC ACT CGT ACT TCT ATC ACT CGG CGT CGG leu ser thr thr arg phe gin leu asn thr cys thr arg thr ser ile thr pro arg pro TOO COO TAC TOT TOT COT ACT GAA ACT AAC TAC ATC TGC GIT AAA TGC GAA AAC CAG TAC cys pro tyr ser ser arg thr glu thr asn tyr ile cys val lys cys glu asn gln tyr CCG GTT CAT TTC GCT GGT ATC GGT CGT TGC CCG

> [Met-(-1)] Rana catesbeiana gene & translation of expressed protein

SEQ ID NO:18/19

333 b.p. DNA sequence

linear

CAG AAC TOG OCT ACT TTC CAG CAG AAA CAT ATC ATC AAC ACT COG ATC ATC TGC AAC gin asn trp ala thr phe gin gin lys his ile ile asn thr pro ile ile cys asn ACT ATC CTG GAC AAC AAC ATC TAC ATC GIT OGT GGT CAG TOC AAA CGT GTT AAC ACT TTC

thr ile leu asp asn asn ile tyr ile val gly gln cys lys arg val asn thr phe

ATC ATC TOT TOT GOT ACT ACT GIT ANA GOT ATC TGC ACT GGT GIT ATC AND CTG AND GIT ile ile ser ser ala thr thr val lys ala ile cys thr gly val ile asn leu asn val

CTG TCT ACT ACT CGT TTC CAG CTG AAC ACT TGC ACT CGT ACT TCT ATC ACT CGG CGT CCG leu ser thr thr arg phe gln leu asm thr cys thr arg thr ser lle thr pro arg pro

TOC COS TAC TOT TOT COT ACT GAA ACT AAC TAC ATC TGC GTT AAA TGC GAA AAC CAG TAC cys pro tyr ser ser arg thr glu thr asn tyr ile cys val lys cys glu asn gln tyr

CCG GTT CAT TTC GCT GGT ATC GGT CGT TGC CCG pro val his phe ala gly ile gly arg cys pro

> Rana catesbeiana gene with two mutations to regenerate pyroglutamic acid N-cerminal

Met 22 Leu Met 57 Leu

SEQ ID NO:20/21...

DNA sequence 333 b.p.

linear

[Met-(-1)] Rana catesbeiana gene with two mutations to regenerate pyroglutamic acid N-terminal

Met 22 Leu Met 57 Leu SEQ ID NO:20/22

DNA sequence 333 b.p.

linear

ATG CAG AAC TOG OCT ACT TTC CAG CAG AAA CAT ATC ATC AAC ACT CCG ATC ATC TCC AAC $(His)_6$ -met oln asn trp ala thr phe gln gln lys his ile lle asn thr pro lle lle cys asn

ACT ATC CTG GAC AAC AAC ATC TAC ATC GTT GGT GGT CAG TOC AAA CGT GTT AAC ACT TTC thr lie leu asp asn asn lie tyr lie val gly gly gln cys lys arg val asn thr phe

ATC ATC TCT TCT GCT ACT ACT GTT ANA GCT ATC TGC ACT GGT GTT ATC AAC CTG AAC GTT lie lie ser ser ala thr thr val lys ala lie cys thr gly val lie asn leu asn val

CTG TCT ACT ACT CGT TTC CAG CTG AAC ACT TGC ACT CGT ACT TCT ATC ACT CGG CGT CGG leu ser thr thr arg phe gln leu asn thr cys thr arg thr ser lle thr pro arg pro

TOC COS TAC TOT TOT COT ACT GAA ACT AAC TAC ATC TOC CIT AAA TOC GAA AAC CAG TAC cys pro tyr ser ser arg thr glu thr asn tyr lle cys val lys cys glu asn gln tyr

CCC GTT CAT TTC GCT CCT ATC GGT CGT TCC CCC pro val his phe ala gly ile gly arg cys pro

[Met-(-1)] Rana catesbeiana gene with two mutations to regenerate pyroglutamic acid N-terminal

Met 22 Leu Met 57 Leu (His)6 SEQ ID NO:23/24

DNA sequence 333 b.p.

linear

QlS Rana catesbeiana gene (serine in 1 position)

SEQ ID NO:25/26

DNA sequence 333 b.p.

linear

ATC TCA AAC TGG GCT ACT TTC CAG CAG AAA CAT ATC ATC AAC ACT CGG ATC ATC TGC AAC met ser asn trp ala thr phe gln gln lys his ile ile asn thr pro ile ile cys asn

ACT ATC ATG GAC AAC ATC TAC ATC GTT GGT GGT CAG TGC AAA CGT GTT AAC ACT TTC thr lie met asp asn asn ile tyr ile val gly gly gln cys lys arg val asn thr phe

ATC ATC TOT TOT GOT ACT ACT GTT ANA GOT ATC TGC ACT GTT ATC AAC ATG AAC GTT lie ile ser ser ala thr thr val lys ala ile cys thr gly val ile asn met asn val

CTG TCT ACT ACT CGT TTC CAG CTG AAC ACT TCC ACT CGT ACT TCT ATC ACT CCG CGT CCC leu ser thr thr arg phe gln leu asn thr cys thr arg thr ser ile thr pro arg pro

TOC COG TAC TOT TOT COT ACT GAA ACT AAC TAC ATC TGC GTT AAA TOC GAA AAC CAG TAC Cys pro tyr ser ser arg thr glu thr asn tyr ile cys val lys cys glu asn gln tyr

CCG GTT CAT TTC GCT GGT ATC GGT CGT TGC CCG pro val his phe ala gly ile gly arg cys pro

[Met-(-1)] QIS Rana catesbeiana gene (serine in 1 position)





SEQ ID NO: 27/28

atcagttgct catcgtttga ccaagttgtt ttccatctga agcaatattt 1 atatataatt totottatat ataaaggoot gatcacgact tocagaatgt 51 ttccaaaatt ctcatttctc ctgatatttg cagttgtttt gagtctcact 101 S F L L I F A V V L S PKF cataagteet tatgteaaga etggettaeg ttteagaaga ageaeetgae 151 FQKK K S L C Q D WLT aaacacccgg gatgttgact gtaataatat catgtcaaca aacttgttcc 201 NLFH NNI M S T NTR D V D C actgcaagga caagaacact tttatctatt cacgtcctga gccagtgaag 251 K N T F I Y S R P E CKD gccatctgta aaggaattat agcctccaaa aatgtgttaa ctacctctga 301 NVLT A S K T S E A I C K GII gttttatctc tctgattgca atgtaacaag caggccttgc aagtataaat 351 S D C N V T S RPC KYKL FYL taaagaaatc aactaataca ttttgtgtaa cttgtgagaa tcaagctcca 401 T N T F C V T C E NQAP K K S gtacatttcg tgggtgtcgg acattgctag aaatatgttt gacaacaggg 451 G V G H C V H F V atgtgataag cagctgcaag aaattatttt gaagtgaatt tactaaagac 501 actaattttg cataaatttt ccccagagct taccggtagt aagaaaattc 551 caacagggag ccaagcacag aaagtaaact aaggagccaa agtaattata 601 aaagtcacac tggaccgctg ctactgcact cagatgacca aatgagaaac 651 agacaaaaac agcagagttg ggaagcgcag atccgggagg tggcggggag 701 tcaattgggg atggagtcca tgtgagattt ggaaccgttt gttgctggtg 751 aagcatgtgg ccggtgcaca gtacacatgg ggaaagatag tcggattggc 801 cgggctcgct gtggtggtgc cggcggttga gccaaaggtg gtggggagat 851 ggctgtcccc ccttctgtgg gggctgtgga cagagggagc tgcggaccag 901 gggtgggagg cctggagaga attttcaaac agctgacgtg gccggggctg 951 ggcagcatcg gggaggggaa gggctgggct cagatccagg aagcatggtc 1001 actgtatgac cagagtggaa gatggcagag ccgctgcagt ggccggggag 1051 accagaggga totgtgocca gootttoocc tooctgatgt ggoocgtttt 1101 tgqttatgqt aaccgctccc agctgtttgg gggtgttttc gggcttcgca 1151 tttttggtct gcggctccct ctgtccacgg ccctcatgga gggggggtgg 1201 gcatttctcc accgectttg getetgttge tggcaetgte geagegagtt tggccagtca tggctcattt teccatttgt catgtgtgtt ggttgcatgt 1251 1301 tttgtcggcg gtggactgtt ttgaatttca catggattcc atcttcggtt 1351 ggttccttgc cacctcctgg atctgtgctt tccaattctg ttttttcccc 1401 agcgcttagt ggatgcagtg aaactctggt gattaccatc atccaatcat 1451 gtgcaagaaa aaatattttc atatttcttc cacccaattg ggtattcatt 1501 1551 aggaagtttg agcacattca cgttctaggg aaaatgagtg caactgcact tccaaagttc acagtctatt tgcctttagt aaatccaccc cattatttct 1601 gagcagagga caaatctatg gcaacaaaaa aactttacct actgaattat 1651 tttatattga ttgaagataa tctttctttc atttcctaaa tattgtaatc 1701 aaaattaata cataacagct atgtattata ccacagcagc aaatgttaaa 1751 atagttttaa acgtaaaata tgttttacct taaagtggaa gtaaacttct 1801 atcactaaat tttacctata ggtgagaccc atgcgctctt caggaatggc 1851 cgctggtgct gttccttcag agccctgtgc tgcgaacggc ggctcccgtg 1901 tgcatgtaca ggagtgacgt catcacagct ccggccagtc acagagttag 1951 2001 agttcaagtg tgagtggctt gagccacgat gatgtcgctc ccaaacatgt gtgcgggggt ctccgtttgc ggcgcaggac actgggggaa tagcatgggt 2051 gtgccgttcc ttcagagcat atgcgtgggt gacgtcacta gctgcatcta 2101

	· T			•	
2151	aagtaatatc	tcctaaacaa	tgcacattta	ggagatagtt	acagtaccta
2201	tgggtaagcc		cttacctata	ggtaaaaatc	atgcatggga
2251	gtttacttcc		cggcatagct	gcgtgtttat	aaaccaacca
2301	gcagtagcaa		gaggagagca	ggctgacata	ttaaagtaaa
2351	aatcttacct		aaagtagttg	aaaataagat	ggcctgcagg
2401	gtcttaaaaa			cacatgaggc	accagatctc
2451	gctccccac			tggtaatgtg	agtttcttag
2501	gctcgaccgt		tggccctcca	agtgatacat	gggagataag
2551		cgtatgcacg		tgggcggatg	ttgggatagg
2601	acgatcagag	agatgctcag	atctgcccga	aggagaaagg	tggaaacatc
2651	cattcaatot	catatgccta	aagaagccac	ccaccataaa	aagttaatag
2701	atcatcaggt	ggcagccaac	cacaccaggc	ccaaaggagg	gtggccccag
2751		aggaacagca	ctcagctatc	acataattac	acaagagtat
2801		tgtgggtatt			aaaaaaaaa
2851	aaaaa	- 3 - 3 3 3			
2001					•